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Sense of Place in Virtual Learning Environments

Vipin Arora
University of Nebraska at Omaha, varora@unomaha.edu

Deepak Khazanchi
University of Nebraska at Omaha, khazanchi@unomaha.edu

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University of Nebraska at Omaha
varora@unomaha.edu

Deepak Khazanchi
University of Nebraska at Omaha
khazanchi@unomaha.edu

ABSTRACT

Drawing on existing research from the fields of human geography and environmental psychology, we define the term sense of place (SOP) and point out the subtle differences between the various uses of the term in respect of different technology capabilities associated with Virtual Learning Environments (VLEs). We also identify the attributes of a place that affect a user's perceived sense of place. Finally, we provide an analysis of the dimensions of the sense of place construct as it relates to the different technology capabilities associated with VLEs. The paper lays a foundation for further empirical research on the notion of SOP, its impact on learning outcomes and design of VLEs.

Keywords
Sense of Place, Technology Capabilities, Virtual Learning Environments, Online Learning.

INTRODUCTION

Sense of Place (SOP) is the way in which people experience, use and engage with the places they occupy (Turner, Turner, & Burrows, 2013). The concept has its origin in the fields of environmental psychology, human geography and sociology where it is used to study the effect of environment on human behavior (Patterson and Williams, 2005). In the literature on virtual collaboration and online learning, researchers have used the term sense of place in different ways. For example, Zigurs and Munkvold (2006) used the term sense of place while discussing the importance of providing contextual cues in collaboration technologies. In a recent study, the term sense of place was used as an antecedent of "sense of community" for the users of social networking sites (Mamonov, 2013).

Specifically, in studies on virtual learning environments (VLEs), researchers have used the term in two different ways. On one hand, the term is used in the context of situated and collaborative learning in task-specific VLEs (Clark and Maher, 2001, 2003). On the other hand, the same term has been used as an antecedent of sense of community for online distance learners. Different technological and pedagogical means can be used to provide a sense of place for online distance learners (Wahlstedt et al., 2008; Whitworth, 2008; Northcote, 2008; Minocha et al., 2010).

However, the term SOP has seldom been defined within the literature on virtual environments. It is unclear what factors are important in studying and measuring perceived SOP in virtual settings (Champion, 2005).

Nonetheless, irrespective of the context of the use of the term, there is some empirical evidence that users' perceived sense of place in a VLE affects learning outcomes. For example, Clark and Maher (2003) provide qualitative empirical evidence of the direct effect of learners' perceived sense of place on their learning outcomes while working in a virtual design studio. On the other hand, in the broader online distance learning context, learners' perceived sense of place has been shown to have a more indirect effect on their learning outcomes. For example, Northcote (2008) asserts that perceived sense of place in the online learning environment contributes to a sense of community for online learners, which has been found to be an important factor for effective distance online learning. Other researchers have also argued that a sense of place experienced by learners in online learning contexts can be crucial to their overall learning experience (Nesson and Nesson, 2008; Wahlstedt et al., 2008; Whitworth, 2008; Minocha et al., 2010; Arora & Khazanchi, 2010). Therefore, sense of place is considered an important concept in the virtual learning domain and has both direct and indirect effects on learning outcomes.

Given the above background, the specific research question addressed by this paper is:

What is 'Sense of Place' in virtual learning environments?

The research contributes to the existing literature on information technology (IT) enabled virtual collaboration and online learning by defining the term sense of place as applied to virtual environments. The conceptual paper lays a foundation for further empirical research on the use of the sense of place construct in the design and evaluation of different types of VLEs.

The rest of the paper is organized as follows. We first point out the subtle differences between the various uses of the term virtual learning environment. Next, we define the term sense of place and describe how sense of place manifests in virtual learning environments. Finally, we provide an analysis of the dimensions of the sense of place construct as it relates to the different technology capabilities associated with VLEs.

VIRTUAL LEARNING ENVIRONMENTS

The word "virtual" as used in the term Virtual Learning Environments (VLEs) can either refer to anything which is "computer/technology mediated" in general or it can refer to more specific "use of technology to create a context that mimics reality." Accordingly, Virtual Learning Environments (VLEs) can be conceptualized in two related but somewhat different ways.

On one hand, a VLE is seen as a platform that provides support for management and facilitation of a range of student learning activities, along with the provision of content and resources required to help make the activities successful for learners separated by time and/or space. While some academic and training institutions use such platforms to supplement more traditional ways of teaching (blended learning), others use them exclusively for e-learning mainly to support distance learners, for whom all coursework is conducted online (Rainer et al., 2007). This conceptualization looks at a VLE as an electronic learning system that provides access to the participants to a wide range of resources and enables e-learning both in formal education sector and in corporate settings. Popular examples of such VLEs are BlackBoard and WebCT.

In the second conceptualization, a VLE is seen as a setting constructed to simulate realistic experiences for specific learning tasks with one or more educational objectives. The specific learning objectives include experiential learning, simulation-based learning, inquiry-based learning, guided exploratory learning, community-based learning and collaborative learning. Examples include virtual laboratories, virtual representation of real places that are hard to explore in the physical world (e.g., bottom of the ocean floor), authentic looking settings that include contextual elements for synchronous group discussions, role plays and design team work. These virtual learning environments aim at developing educational context and content for different learning tasks and providing first order experience to learners "virtually" by leveraging different technology capabilities. The rationale for designing these VLEs is that they support accomplishment of learning tasks by providing a context which results in an engaging learning experience and better learning/training outcomes.

The value of experiential and collaborative learning is widely recognized because of its positive effects on social, cognitive, and meta-cognitive development. With continuous advancement in information technology capabilities including the availability of 3D immersive virtual worlds, it is increasingly becoming possible for distributed online learners to actively participate and engage in activities like design team work and role plays, which were traditionally possible only in a physical setting. This ability to augment student learning with advanced technology capabilities is transforming the way VLEs are designed and utilized. For example, with the integration of general purpose e-learning platforms such as Moodle and Blackboard to the 3D web, different types of virtual settings that afford different types of training activities are now available from within a learning management system (http://www.exitreality.com/?page_id=167). These augmented learning environments take advantage of collaborative learning, task orientation and interactive communication that is based in traditional situated cognition theory and socio-cognitive theory which emphasize the importance of context and collaboration in the learning process (Lave and Wenger, 1991).

Therefore, VLEs, for the purpose of this research, are defined as *a set of integrated components put together for management and facilitation of a range of student learning activities, along with the provision of content and resources required to help make the activities successful for learners separated by time and/or space.*

PLACE AND ITS ATTRIBUTES

The terms space and place are sometimes used interchangeably, but they have different meanings. Places are bounded spaces imbued with meaning (Saunders et al., 2011). While space deals with the relative location of objects, place has more to do with their meaning and significance for humans and their activities (Schultze and Boland, 2000). Researchers in human geography, environmental psychology, architecture, and urban planning have proposed many theoretical models of place and defined place in a variety of ways (See for example, Relph (1976), Norberg-Shulz (1979), Canter (1977, 1991 and 1997)). However, there are important similarities among the various theoretical models of place and most place researchers agree on the basic attributes of place. A place is thought of as being made up of not just the **physical environment** but also the **activities**, and the **social interactions** among the people who occupy the place.

For the purpose of this study, place is defined as *the physical setting along with the human activities, and human social and psychological processes rooted in the setting.*

SENSE OF PLACE

The term sense of place is often used in relation to those characteristics of a place that make it special or unique, as well as those that foster a sense of belonging with the place (Relph, 2007). Researchers have defined SOP as the combined set of the place meanings and place attachments that a person develops for a place (Brandenburg & Carroll, 1995; Williams & Stewart, 1998). Sense of place includes both the cognitive and affective domains (Semken & Butler Freeman, 2008). In sum, SOP is useful in understanding people's engagement with places.

For the purpose of this research, sense of place is defined as *an individual's perception of the capability of a place to actively engage the individual by supporting a set of well defined place-specific functional and socio-emotional needs.*

Sense of Place in VLEs

Human activities take place in settings that are designed to support them (Ponti and Ryberg, 2004). In case of higher education, a university campus in the physical world provides the users with an overall teaching and learning environment. Learning is driven as much by social and situational factors as by cognitive ones because it is usually an interactive and dynamic process consisting of a series of social interactions that occur in an environment (Laurillard, 2002). The university campus has several places designed for specific learning activities that account for both cognitive and social aspects of learning. The teaching and learning activities in the university campus are normally spread across lectures, laboratory sessions, and formal and informal meetings among students and instructors. In places like classes and professors' offices, students can formally interact with other students and professors. Also, there are places like lawns, cafeterias, libraries, student centers etc. where informal interactions take place among students and between students and professors. These interactions help in further enhancing the classroom learning and hence contribute to the learning experience of the students. In sum, the university campus provides a learning environment by virtue of (i) its physical characteristics (ii) affording a range of learning activities, and (iii) facilitating formal and informal interactions among students and professors. So, it can be concluded that the university campus is a 'place' where students' various learning needs are supported, and students' perceive a sense of place when present there.

Similarly, for online learners, VLEs aim to provide an overall meaningful learning environment. VLEs can create a sense of place for online students by providing access to learning materials, other students, and teachers (Maher et al., 2001). By integrating a set of tools powered by a variety of technology capabilities, a VLE may not only enable design and delivery of educational content in different formats using several different media, but also support interactions among students and between students and instructors by providing support for both synchronous and asynchronous communication. The participants' perceived sense of place in VLEs can play a critical role in enabling a sense of community among online learners (Northcote, 2008). Some researchers have proposed that VLEs should be based on the concept of place and designed as virtual campuses (Fominykh et al. 2008; Maher, Simoff, and Clark, 2001; Prasolova–Førland et al., 2006; De Lucia et al., 2009).) Such environments provide learners with a "place" that can act as a framework for a wide range of educational and social activities and also with a community feeling that is considered very important for the overall learning process. Furthermore, the student perception to be present in a didactic setting provides them with a "realism sensation" and makes their learning experience engaging (De Lucia et al., 2009). Adding advanced technology capabilities in VLEs can further enhance the sense of place for online learners by providing a context for carrying out the type of activities that are normally possible only in a physical setting. Table 1 presents a distinction between the range of capabilities available in VLEs in terms of the three place attributes identified as contributing to sense of place.

Place Attributes	Basic Technology Capabilities in VLEs (Low Learner Engagement)	Advanced Technology Capabilities in VLEs (High Learner Engagement)
Physical Characteristics	Familiar look to the users both in terms of form and structure to enable ease of navigation.	Look of a co-located setting in a synthetic environment that provides a social context for remote participants where they can interact and work together on shared artifacts.
Afforded Activities	Support for management and facilitation of a range of student learning activities, along with the provision of learning resources in different formats (Audio, Video, Slides, Notes, etc.).	Virtual experiments, design team work, group projects, role plays etc.
Social Interactions	Multiple channels for both synchronous and asynchronous communication using a range of technologies like e-mail, discussion boards, blogs, audio/video conferencing etc.	Real time embodied interaction through avatars, Text/Voice chat supported by gestures.

Table 1: Sense of Place and Design of VLEs

SENSE OF PLACE DIMENSIONS

The concept of 'sense of place' (SOP) has been explored in different disciplines drawing on different theoretical and methodological traditions. Place identity (Proshansky et al., 1983), place attachment (Moore and Graefe, 1994; Riley, 1992), and place dependence (Stokols and Shumaker, 1981) are the three constructs that most often appear in the literature concerning place related research. Researchers have described the multidimensionality of the construct of SOP in emotional, cognitive, and behavioral terms (Altman and Low 1992). Jorgenson and Stedman (2001 and 2006) conceptualized SOP as a three dimensional construct comprising of place identity, place dependence, and place attachment. This holistic conceptualization of SOP captures cognitive, behavioral, and affective perceptions of individuals towards a place.

Place Identity - Cognitive Evaluation of VLEs

Place identity is categorized as a cognitive component of SOP. Place identity is similar to other cognitive functions in that it influences what individuals see, think and feel in the physical environment. Place identity includes images, memories, and conceptions regarding the color, size, distance and other attributes of the physical space and also the conscious beliefs and expectations of where, when and why to use a particular place (Proshansky, Fabian, & Kaminoff, 1983).

In VLEs like BlackBoard, the relevance of place identity may be limited to the user interface characteristics like ease of use and ease of navigation. Additionally, different logos and pictures associated with the university can be included to invoke a feeling of community and belongingness for the students.

To achieve a high place identity, a VLE must convey a message to the learners about its nature and the expectations of how it will be used. It thus follows that the design of a VLE needs to be influenced by the learners' understanding of a similar place in the real (physical) world based upon their past experiences. Individuals prefer the virtual settings that look familiar to them both in terms of form and structure because they don't have to invent new patterns of activity in those virtual settings. A VLE incorporating virtual world technology capabilities can be used to design an overarching virtual learning environment similar to that provided by a physical university campus. Individuals may perceive a high place identity in such VLEs.

Place Dependence - Conative Evaluation of VLEs

Place dependence corresponds to the conative or behavioral component of sense of place, and refers to the ways in which a place facilitates the achievement of desired goals or execution of specific activities (Schreyer et al. 1981; Stokols and Shumaker 1981). It has been noted that the most important role of a place is its ability to facilitate the goals of the people (Canter 1983). A high degree of perceived place dependence in a VLE would mean that the individual finds the environment to be highly conducive for the learning task at hand. On the other hand, a low score on the place dependence dimension would point to functional deficiencies in the VLE that hinder the task accomplishment. Traditional VLE platforms such as Blackboard provide reasonable support for the distribution of learning content in several different formats (text, presentations and even audio/video). Traditionally, technology capabilities available in VLEs included support for only disembodied asynchronous interactions among students and instructors through tools such as e-mail and discussion board. Educators across the globe have proposed to harness the educational power of new technologies like virtual worlds, blogs, wikis, podcasts, and even social networking websites to supplement the established virtual learning environments like BlackBoard (Hawkridge & Wheeler 2009). Different technologies might be integrated so that best utilization of each technology could be made for the learning tasks that are best supported by that particular technology. This integration may result in providing the user with a rich set of tools to support a variety of learning tasks at the same 'place', and the learners may perceive a high degree of sense of place in such VLEs. So, one can expect that the broader the range of learning activities supported by the VLE, the higher the score on the place dependence dimension of SOP. It seems logical that traditional VLEs are already incorporating this new range of technology capabilities to support learner needs.

Place Attachment - Affective Evaluation of VLEs

Place attachment is an emotional bond to a place that develops from direct experience (e.g., living, working, or vacationing in the place), vicarious engagement (e.g., through books or visual media), or some combination thereof (Relph, 1976; Williams & Stewart, 1998). The place attachment dimension of sense of place includes both physical attachment (that usually develops over a period of time) as well as social attachment to a particular setting.

Both the physical and social attachment facets of sense a place would seem to be relevant in VLEs, especially as the amount of time that learners are expected to spend in these environments increases. Graetz (2006) points to the emotional attachment of learners with a VLE by saying, "[I]t may become a place where students love to learn, a place they seek out when they wish to learn, and a place they remember fondly when they reflect on their learning experiences."

The relevance of place attachment in the overall notion of sense of place may be dependent both on the nature of the task and the amount of time spent in performing the task. For example, if the task is collaborative and involves interactions among a

group of learners who manipulate and/or work on artifacts together, but does not require a lot of time to finish, only the social attachment sub-component of place attachment may become a dominant factor.

CONCLUSION

A place can be thought of as being made up of a range of attributes which include not just the physical environment but also the activities, and the social interactions among the people who occupy the place. All of these attributes affect a person's emotional and psychological engagement with a place, and, therefore, contribute to the sense of place that people experience when present at a particular place. Similarly, sense of place is associated with online distance learners' engagement in virtual learning environments and enables a sense of community among them. Adding advanced technology capabilities in VLEs can further enhance the sense of place for online learners by providing a context for carrying out the type of activities that are normally possible only in a physical setting. The holistic conceptualization of SOP proposed in this paper in terms of place identity, place dependence and place attachment captures cognitive, behavioral, and affective perceptions of individuals towards a virtual place. This multidimensional conceptualization of sense of place might be useful in further empirical research on the design and evaluation of VLEs utilizing a range of technology capabilities. However, it must be noted that while the design characteristics of VLEs clearly affect perceived sense of place of online learners, pedagogical factors such as quality of course/task design, guiding structures, use of appropriate tools, personalization, and humanization are equally important in "creating" a sense of place for online learners.

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